IN THE CLAIMS

Please cancel claims 15, 17 and 23 – 26, add claims 33 – 36, and further amend the claims as indicated below.

1. (currently amended) A system for optimizing the performance of an operating crew of at least one aerial vehicle during at least one close-in air combat by providing in real-time automatic situation assessment and by generating dynamically at least one indication and by communicating the at least one indication as guidance to the operating crew of the at least one aerial vehicle, the system comprising the elements of:

an assessment information database implemented on at least one computer; and

an assessment and guidance software application implemented on the at least one computer for
providing in real-time automatic situation assessment, generating dynamically at least one
indication and communicating the at least one indication as guidance to the operating crew of the
at least one aerial vehicle, wherein said assessment relates to a situation of a dog fight air combat
between two aircraft vehicles.

2. (original) The system as claimed in claim 1 wherein the assessment information database comprises the elements of:

an aircraft characteristics file comprising the aircraft flight envelope, the aircraft maneuver-energy
graphs, models and limitations, and the aircraft weapon system characteristics;

a set of formulas for optimal relative maneuvering file; and

an external information file.

3. (original) The system as claimed in claim 1 further comprises the elements of at last one computer installed on the at least one aerial vehicle or on at least one ground station to receive, store, process and forward data specific for the optimization of the conduct of the at least one aerial engagement.

4. (currently amended) The system as claimed in claim 1 further comprising at least one off-board computer installed in at least one ground station to provide additional data specific for the optimization of the conduct of the at least one close-in air combat engagement.

5. (original) The system as claimed in claim 1 further comprising at least one sensor device installed on the at least one aerial vehicle to dynamically monitor the physical variables associated with the participant elements of the at least one close-in air combat.

6. (original) The system as claimed in claim 1 further comprising at last one sensor device installed in the at least one ground station to monitor physical variables associated with the participant elements of the at least one close-in air combat.

7. (previously presented) The system as claimed in claim 1 further comprising at least one data communication network linking the at least one aerial vehicle and the at least one ground station to allow for the transmission or reception of the information associated with the at least one close-in air combat.

8. (original) The system as claimed in claim 1 wherein the assessment and guidance application comprises the elements of:
   an application control module to initiate, to activate, to control and to execute the application;
   a database interface module to allow for access the database and to obtain the requested records from
      the database;
   a parameters processor module to handle the operational parameters of the system;
      an information-marshalling module to organize the information received from various sources;
   a situation analyzer and mapping module to analyze the at least one current situation concerning the at
      least one aerial engagement; and
   a response assessment and response selector module to generate at least one response associated with
      the at least one current situation and the at least one potential situation.

9. (original) The system as claimed in claim 8 wherein the assessment and guidance application further comprises any one of the elements of:
   a future situations projector and mapping module to create at least one potential future situation and
      associating the at least one future situation with the at least one current situation;
   a post-combat debriefing module;
   a guidance generator module to convert the at leas tone selected response to t least one guidance
      instruction;

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a guidance display module to communicate the at least one guidance instruction to the operating crew;

an aircraft status and system status monitor;

a learning and adaptation module;

a history generator and history replay module;

an air combat formulas or algorithms or a set of rules module or algorithm;

a testing/maintenance/initialization module; and

a user interface module.

10. (currently amended) The system as claimed in claim 1 wherein the computer further comprises the elements of:

a communication device to link the at least one computer to remote information sources via the at least one data communication network;

a processor device to execute the required sequence of software instructions embedded in the assessment and guidance application;

digital signal processor device to process digitally formatted information from the at least one sensor device and from the at least one data communication network; and

a data bus device to provide at least one data delivery channel among the diverse devices installed in - the at least one on-board device.

11. (original) The system of claim 10 further comprising a sound synthesizing device to generate audio instructions to be communicated to the operating crew of the least one aerial vehicle.

12. (original) The system as claimed in claim 8 wherein the assessment and guidance application further comprises any one of the elements of:

an operating system to supervise and control the execution of the programs installed in the at least one computer;

a data link handler component to initiate transmission of outgoing information and to receive incoming information from the at least one data communication network;

an input/output handler component to supervise and control the peripheral devices linked to the at least one computer;

a database handler component to initiate access to the assessment information.

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13. (original) The system as claimed in claim 11 wherein the sensor device is an instrument providing an indication as to the parameters of flight.

14. (original) The system as claimed in claim 11 wherein the sensor device is a global positioning system device.

15. (cancelled)

16. (original) The system as claimed in claim 1 wherein the at least one aerial vehicle is an unmanned combat aerial vehicle.

17. (cancelled)

18. (original) The system as claimed in claim 1 wherein the operating crew is a remotely located operator.

19. (original) The system of claim 3 wherein the computer is an onboard computer located within the aerial vehicle.

20. (original) The system as claimed in claim 1 further comprises the element of a visual display device to communicate the at least one instruction to the operating crew in a visual manner.

21. (original) The system as claimed in claim 1 further comprises the element of an audio output device to communicate the at least one instruction to the operating crew in an aerial manner.

22. (original) The system as claimed in claim 1 further comprises the element of a manual input device to communicate control information from the operating crew to the system.

23 - 26. (cancelled)

27. (original) A method for optimizing the performance of an operating crew of at least one aerial vehicle during at least one close-in air combat by providing in real-time automatic situation assessment data and by generating dynamically at least one instruction and by communicating the at least one instruction as guidance to the operating crew of the at least one aerial vehicle, the method comprising the steps of:

for each one of at least two aerial vehicles:

obtaining air combat engagement and energy information required for the analysis of the air combat situation;

obtaining aircraft characteristics information required for the analysis of the air combat situation;

obtaining aircraft weapon system characteristics information; and

obtaining remotely sensor-specific information;

analyzing the situation between the at least two aerial vehicles and mapping the analyzed situation in relation to the previously analyzed situations between the at least two aerial vehicles;

generating at least one future potential air combat situation based on the at least one mapped air combat situation;

determining at least one optimal state of the at least one aerial vehicle based on the at least one optimal air combat situation between the at least two aerial vehicles;

generating at least one recommendation based on the at least one optimal future potential air combat situation between the at least two aerial vehicles.

28. (original) The method as claimed in claim 27 further comprises the steps of:

transforming the at least one recommendation into at least one guidance indicator;

displaying the at, least one guidance indicator to the operating crew of the at last one aerial vehicle to enable the application of the associated commands to the controls of the aerial vehicle.

29. (original) The method as claimed in claim 27 further comprises transforming the at least one recommendation into at least one direct input commands to be automatically applied to the suitable controls of the at last one-aerial vehicle.

30. (previously presented) An apparatus for optimizing the performance of an operating crew of at least one aerial vehicle during at least one close-in air combat by providing in real-time automatic situation assessment, the apparatus comprising:

a device for: obtaining air combat engagement and energy information required for the analysis of the air combat situation;

obtaining aircraft characteristics information required for the analysis of the air combat situation;

obtaining aircraft weapon system characteristics information; and

obtaining remotely sensor-specific information;

an analysis device for:

analyzing the situation between the at least two aerial vehicles and mapping the analyzed situation in relation to the previously analyzed situations between at least two aerial vehicles;

generating at least one future potential air combat situation based on the at least one mapped air combat situation;

based on the analysis determine at least one optimal state of the at least one aerial vehicle based on the at least one optimal air combat situation between the at least two aerial vehicles; and

generating at least one recommendation based on the at least one optimal future potential air combat situation between the at least two aerial vehicles.

31. (original) The apparatus as claimed in claim 30 further comprises:

a transforming device for transforming the at least one recommendation into at least one guidance indicator; a display device for displaying the at least one guidance indicator to the operating crew of the at last one aerial vehicle to enable the application of the associated commands to the controls of the aerial vehicle.

32. (original) The apparatus as claimed in claim 30 further comprises a transforming device for transforming the at least one recommendation into at least one direct input commands to be automatically applied to the suitable controls of the at last one aerial vehicle.

33. (new) The system as claimed in claim 1, further comprising an identifying element for identifying the aircraft.

34. (new) The system as claimed in claim 1, wherein the assessment and guidance software application provides accurate speed and direction guidance.

35. (new) The system as claimed in claim 1, wherein the assessment and guidance software application provides guidance according to the flight path of an adversary aircraft.

36. (new) The system as claimed in claim 1, wherein at least a portion of the situation assessment is a function of ammunition data.